

LAMINATE VENEERS A VIABLE ALTERNATIVE TO FULL COVERAGE CROWNS – A CASE REPORT

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ABSTRACT

Everyday there is growing number of patients even seeking esthetic enhancement of already healthy teeth. Porcelain laminate veneers are used frequently for achieving esthetics in natural dentition. These veneer only need minimal tooth preparation compared to the extensive tooth preparation in case of full coverage all ceramic and metal ceramic restorations. This article discusses about the indications, advantages, various clinical steps, disadvantages and contraindication of the porcelain laminate veneers along with a case report.

KEYWORDS: *Wrap Around Preparation, Spot Etch And Spot Bonding, Silane Coupling Agent, Dual Cure Composite Resin*

INTRODUCTION

The early work of Buonocore on acid etching along with resin composite bonding and dental ceramic etching and bonding by Simonsen and Calamia has made the conservative tooth preparation and restoring with porcelain laminate veneers possible¹. Laminate veneers are indicated in areas such as to close mild diastemas, to correct tooth forms and position, discolourations, incisal abrasions and to replace old extensive restorations^{2,3}. Even though porcelain has a long history as one of the biocompatible and only esthetic alternative as full crowns, using it as a labial veneer along with the concept of acid etching and bonding was first documented in the year 1975 by Rochette⁴.

Porcelain as laminate veneer offers advantages like inherent colour control, improving the periodontal health by reducing plaque accumulation due to its highly glazed surface, provide greater resistance to abrasion and wear, its resistance to fluid sorption, finally its excellent esthetics^{5,6}. The ultimate success of laminate veneers lies in proper tooth preparation, impression making, accurate shade selection and finally implementing proper bonding technique. This case report will be a useful guide for all clinical procedures in fabrication of porcelain laminate veneers.

Case Report

A male patient aged 21yrs reported to the department of prosthodontics complained of discoloration in his front teeth. On examination it was observed that the central incisors of the patient had grade 2 discoloration due to enamel fluorosis (Figure 1). A more conservative mode of treatment of laminate veneers was suggested that involved minimal tooth preparation and a more esthetic alternative.

The diagnostic impressions were taken in irreversible hydrocolloid and poured in type 2 gypsum product. Putty index for assessing the amount of tooth reduction and for provisional restorations were made. Initially depth orientation grooves were made using 0.5 mm three tier self limiting depth gauge bur(Figure 2) after which axial tooth reduction is done using parallel sided torpedo bur, the tip of the bur automatically prepares the chamfer finish margins when preparing the axial portion of the tooth. Proximally the tooth preparation is extended into the embrasure space and ends just before the contact area to hide the restoration margin. Finish margins are kept supra gingivally in the cervical region is done (Figure 3a). All the line angles and point angles of the preparation is rounded using soft flex disc. Putty index was placed and verified for assessing the amount of tooth preparation (Figure 3b)

Before making the final impression, one sided fine diamond abrasive strip is used to shape the contact areas. This reshaping the contact area allows proper recording of the impression inter proximally without affecting the integrity and stability of the arch. Tissue retraction is done using retraction cord placed inside the sulcus for about 1minute and the final impression is made using addition silicone impression material using multiple mix technique. Shade is recorded as A1. Provisional acrylic veneers are fabricated and cemented to the prepared tooth using spot etch and spot bonding technique for the easy retrieval of the temporary in later stages. Lithium disilicate crystals has been used for the pressed ceramic for the fabrication of laminates and thickness of the laminates were also evaluated(Figure 4a &4b)

Before bonding Porcelain laminate veneers adaptation of the veneers margins, relationship of one laminate to other and the to the adjacent teeth and the esthetics of the restoration is checked using the try in paste of the dual cure resin cement. Bonding of the porcelain laminate veneers is done with good moisture control technique. Prepared tooth surface is acid etched using 37% Ortho phosphoric acid for 30 seconds followed by rinsing with water and air drying. Frosty white appearance of the etched surface indicates adequate etching of the tooth surface. Bonding agent is applied to the etched surface and allowed it to dry. Inner surface of the veneers are etched using 9% Hydrofluoric acid and rinsed with water. A silane coupling agent is applied to the etched veneer surface and allowed it to dry. Finally dual polymerizing luting resin cement is used to bond the veneer to the tooth. Unset excess resin cement is removed using metallic instrument cervically and using the dental floss interproximally. Once the excess cements are removed, visible light is used to polymerize the resin composite cement for 30 seconds from all sides (Figure 5). Final stage is the checking the sulcus and other areas for the excess cement and remove it and checking for the contact points and finishing those areas using soft flex discs and 10 mm particle size diamond polishing paste. The patient was esthetically satisfied with the appearance and tooth form of the laminates(Figure 6). Review was done that revealed a satisfactory outcome

DISCUSSIONS

Tooth preparations for laminate veneers should always be limited only to enamel and most certainly the finish margins to ensure adequate seal. It is recommended that at least 50% of preparation should be in enamel to enhance the bonding of the veneer to the underlying tooth. However reduced bond strength along with pulpal hyperemia due the exposure of dental tubules to acid etchant and the bonding material itself are the consequence of bringing the tooth preparation to the dentin level.. Study conducted by Fradeani M et al on laminate veneers after 12 years of clinical service provides a 94.4 of clinical survival rate and most of the failure is attributed only due to improper bonding techniques¹. Study conducted by Leempoel et al on laminate veneers reported survival rate of 99% after 5 years and 95% after 11 years¹. Even though porcelain laminate veneers are viable alternative to direct composite resin veneering and full coverage restorations they do have some disadvantages like repairing is difficult once it is luted, technique sensitive, margins are

brittle,time consuming procedures and cost equal to full coverage restorations². laminate veneers are also contraindicated in patients with parafunctional habits, presence of insufficient of enamel and also in excessively fluoridated teeth where etching is difficult^{5,6}.

CONCLUSIONS

With the advent of newer adhesive technologies and advancements in materials laminate veneers can be a viable alternative other conventional treatments. Long term survival of the depends on accurate tooth preparation and particularly proper luting technique.

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APPENDICES



Figure 1



Figure 2



Figure 3a



Figure 3b



Figure 4a



Figure 4b



Figure 4



Figure 5

FIGURE LEGENDS

Figure 1: Preoperative

Figure 2: Preparation with self limiting bur

Figure 3a: Finished incisal preparation

Figure 3b: Verification with putty index

Figure 4a & 4b: Pressed ceramic and thickness of laminates checked

Figure 5: Curing of the dual cure resin cement done

Figure 6: Post treatment